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Rome, 10 June, 2004

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C.-

D. Title: Hinge for eyeglass arms.

E. Inventors: -

F. Priority: NO

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Application n° MI 2003 U 000187.

The year 2003, the 16th day of month of April.

UTILITY MODEL ABSTRACT WITH PRINCIPAL DRAWING, DESCRIPTION AND CLAIMS.

APPLICATION NUMBER MI 2003 U 000187 REG. A - FILING DATE 16/04/2003

B. TITLE

"Hinge for eyeglass arms".

L. ABSTRACT

A chamber (2) integral with the frame of eyeglasses in which there rotates the hinged end of the eyeglass arm (3) comprises at least one first flexure element (4) interposed between said end of the arm (3) and a walls of said chamber to control the rotation and the positioning of said arm.(Figure 1)

M. DRAWING

The present utility model relates to a hinge for eyeglass arms, in particular an elastic hinge to facilitate a better fit for the eyeglasses when worn, the positioning, gradual opening and closing of the arms.

In the remainder of the description this hinge will be referred to more simply only as elastic hinge.

Each of the arms of the glasses normally has one of its ends hinged elastically to an usually curved linkage element between the arm and the lens-holder rim in the following called frame, said element being known in the field under the name of "small muzzle" and will be defined in the in the following description in this manner.

Known are eyeglass frames that have different elastic hinges, though in general make use of compressed helical springs. In the most widely used solutions the helical spring is inserted in an appropriate dead hole previously made along the horizontal axis of each arm or the small muzzle of eyeglass in order to push a metallic cylinder, ball or cursor against a cam of the hinge and thus block the arm in an open or a closed position. Thanks to the elasticity of the hinges, said arms tend to close when they are in the open position, thereby improving the fit of the worn glasses. The force that these means exert on the cam depends on the size of the spring.

Other known elastic hinges utilize substantially the same means described above, but in this case the helical spring, the cylinder, the ball or the cursor are contained in suitable seatings fixed onto the internal surface of the arm and the small muzzle.

The principal disadvantage of the known elastic hinges is constituted by the fact that the use of helical springs, irrespective of whether they are associated directly with the arms or inserted into containers fixed onto the outside of the arms, impose minimum dimensions and constructional characteristics that do not permit the designer to improve the aesthetic appearance of the frames.

The elastic hinge for arms that is the object of the present utility model obviates the aforesaid disadvantage. This hinge carries elastic means that control the rotation of the arm and, as characterized in the claims, comprises a chamber integral with the eyeglass frame and an end of a arm hinged therein and a first flexure element, the end of the arm and the flexure element being positioned with respect to each other in such a way as to control the rotation of the arm between an open and a closed position and its being held in said positions.

End of the arm is intended to refer to any portion of the arm comprised in said chamber, the term being understood to refer to either of the two parts adjacent to the centre of rotation.

The principal advantage of the elastic hinge constituting the object of the present utility model derives from the fact that the flexure element makes it possible to reduce the dimensions of the hinge and to associate the hinge also directly with the frame without the interposition of a small muzzle. All this makes it possible to improve the aesthetics of the eyeglass frames.

The elastic hinge in accordance with the present utility model will now be described in greater detail, the description making reference to the drawings, which illustrate only some particular embodiments, where

Figure 1 shows a first plan view drawn partly as a section,

Figure 2 shows a second plan view drawn partly as a section,

Figure 3 shows a third plan view drawn partly as a section,

Figure 4 shows a first plan view,

Figure 5 shows a first front elevation drawn partly as a section,

Figure 6 shows a second plan view

Figure 7 shows a second front elevation drawn partly as a section,

Figure 8 shows a first perspective view, and the

Figure 9 shows a third front elevation drawn partly as a section,

Figure 1 shows in a schematic manner an elastic hinge 1 for eyeglass arms. The hinge comprises a cylindrical chamber 2 that may be fixed to the small muzzle or the lens-holder rim or also obtained as a single piece with said parts, none of which are shown in the figure. It further comprises an arm 3, shown in part, a leaf spring 4, seatings 5 for containing the ends of said spring 4 and a holed and threaded cylinder 6. The arm 3 has a hole 7 for being fitted onto said cylinder 6 in order to be able to rotate in the directions of the arrow F1 around a centre of rotation R from an open position "A" to a closed position "B" and vice versa. Said arm is also provided with an extension 8 suitable for being received in the two opposite concave seatings C and C' of the spring 4 and to remain blocked there in said closed or open position. The rotation of the arm can take place only if an appropriate force is exerted to overcome the resistance of the extension of the arm held in said concave seatings C and C'.

The arm and the spring are retained inside the chamber 2 by a cover (not shown in the figure) screwed into the cylinder 6.

Equal parts in successive figures are always indicated by the same reference numbers and some parts already described in Figure 1 have not been numbered to avoid complicating the drawings.

Figure 2 illustrates in a schematic manner an elastic hinge 9 in which, inserted in the same bush 2 of Figure 1, there is a leaf spring 10 having a shape different from the spring of Figure 1, its two ends being received in said seatings 5. Said spring 10 comprises a concave seating 11 between said opposite concave seatings C, C', all suitable for receiving the extension 8 of the arm 3 and blocking it in an open position, a closed position and an intermediate position corresponding to said seatings. The rotation of the

arm around the centre of rotation R can take place only when an appropriate force is exerted to overcome the resistance of the arm extension against the spring 10.

Figure 3 illustrates in a schematic manner an elastic hinge 12 for eyeglass arms that comprises a bush,13, a leaf spring 14 inserted and retained on the extension 8, a retention element 15 provided with concave seatings 16 to receive the spring 14 during the rotation of the arm 3. The arm is blocked in an open position, a closed position and an intermediate position coinciding with said seatings 16 and its rotation around the centre of rotation R can take place only when an appropriate force is exerted to overcome the resistance of the spring against the walls of the concave seatings.

Figure 4 illustrates in a schematic manner an elastic hinge 17 for eyeglass arms that comprises a bush,18, a leaf spring in the form of a circular crown 19 engaged on the bottom of the chamber, which is provided with undulations 20 that form seatings 21 to receive the extension 8 of the end of the arm 3. The arm, which can rotate about the centre of rotation R, is blocked in open position, a closed position and an intermediate position that coincide with the seatings 21. A projecting element 22 of the bush, 18 engages with a seating 23 of the spring 19 to avoid undesired rotations.

Figure 5 is a detail of the elastic hinge of Figure 4 and shows that the extension 8 of the arm 3 is engaged in the seating 21 of the spring 19 to remain blocked there. The figure makes it clear that the arm 3 can be made to rotate only by applying an appropriate force sufficient to overcome the resistance of the undulations 20.

It will be understood that, in the solution illustrated by Figures 4 and 5, the arm need not be provided with an extension 8 and in that case the seatings 21, appropriately repositioned and redimensioned, should be capable of receiving the portion of the end of the arm comprised between the cylinder 6 and the perimeter of said chamber.

Figure 6 shows a leaf spring in the form of a circular crown 24 different from the one

illustrated by the two previous figures. This spring 24 is provided with appropriately spaced undulations 25 and by means of its seating 23A can be engaged on the bottom of the cylindrical chamber of Figure 4 by means of the corresponding projecting element 22 shown in Figure 4.

Figure 7 shows in the detail how the arm 3A engages with the spring 24. The undulation 25 of said spring engages with the concave seating 26 provided on the bottom surface of the extension 8A of the arm 3A to block the latter in position. From the figure it will be understood that the rotation of the arm 3 of course is caused only by applying an appropriate force sufficient to overcome the resistance of the undulations 25.

It will be understood that, in the solution illustrated by Figures 6 and 7, the arm 3 need not be provided with the extension 8 and in that case the concave seating 26 will be provided on the bottom surface of the portion of the end of the arm comprised between the cylinder 6 and the perimeter of said chamber.

Figure 8 shows a leaf spring 27 associated with the extension 8 of the arm 3 of Figures 1, 2, 3, 4 and 5 and retained there by the fins 28. The manner in which it functions will be explained by reference to Figure 9.

Figure 9 shows the arm 3 with the spring 27 inserted on its extension 8, the cover 29 of the cylindrical chamber, which is not shown in the figure, is provided with a concave seating 30 to receive the spring 27 and keep the arm 3 blocked in position. It will be understood that, depending on the number of the concave seatings 30, the arm can be blocked in a plurality of positions, including the open and the closed position. Undesired vertical movements of the spring 27 are prevented by the fins 28 of the spring its self, which are retained between the arm 3 and the bottom 31 of said cylindrical chamber (not shown in the figure). From the figure it will be understood that the rotation of the arm 3 of course is caused only by applying an appropriate force sufficient to overcome the

resistance of the spring 27.

It will be understood that, in the solution illustrated by Figures 8 and 9, the arm 3 need not be provided with an extension and in that case the spring 27 will be positioned on the portion of the end of the arm comprised between the cylinder 6 and the perimeter of said chamber and the concave seatings will have to be appropriately positioned.